WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005TX195B

Title: Assessing the Potential of Zero-Valent Iron to Reduce Perchlorate and Nitrate Mobility in Soils

Project Type: Research

Focus Categories: Groundwater, Water Quality, Treatment

Keywords: nitrate reduction, zero-valent iron, groundwater contamination

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $5,000

Non-Federal Matching Funds: $19,615

Congressional District:

Principal Investigators:
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Abstract

Perchlorate is a major groundwater contaminant of concern in Texas and its presence has been documented in various regions of the state. Perchlorate poses significant challenges because of its mobility and because it can result from natural processes as well as human activities. This project will evaluate the ability of zero-valent iron to chemically reduce perchlorate, nitrate, and other chlorinated organic contaminants from soils and groundwater formations. The project will determine how iron production in soils affects the reduction of perchlorates, nitrate, and ammonia in soils. The study will also quantify the extent to which perchlorate and nitrate are reduced as a result of iron application rates, and will estimate the longevity (the reducing life) of zero-valent iron in soils. Other aspects of this study will determine the possible fate of residual zero-valent iron and the products of reduction, and will develop a mass balance equation for perchlorate, nitrate, and chlorinated organic pollutants. The study will ultimately provide useful design parameters for plot- and field-scale studies.